



# Air Toxics Monitoring Program



Region 4 Air Monitoring Workshop  
Tampa Bay Florida, April 2011

# History of Toxics in Louisville

- 2002 - EPA Region 4 released a county-by-county *Air Toxics Relative Risk Screening Analysis* that identified Jefferson County, KY as having the highest potential adverse impact of toxics of the 736 counties in the 8 southeast states.
- 2003 - The West Louisville Air Toxics Study (WLATS) identified 17 chemicals that were monitored at levels representing a cancer risk of greater than one in a million and one additional chemical (Chloroprene) was monitored at an unsafe level considering non-cancer effects.

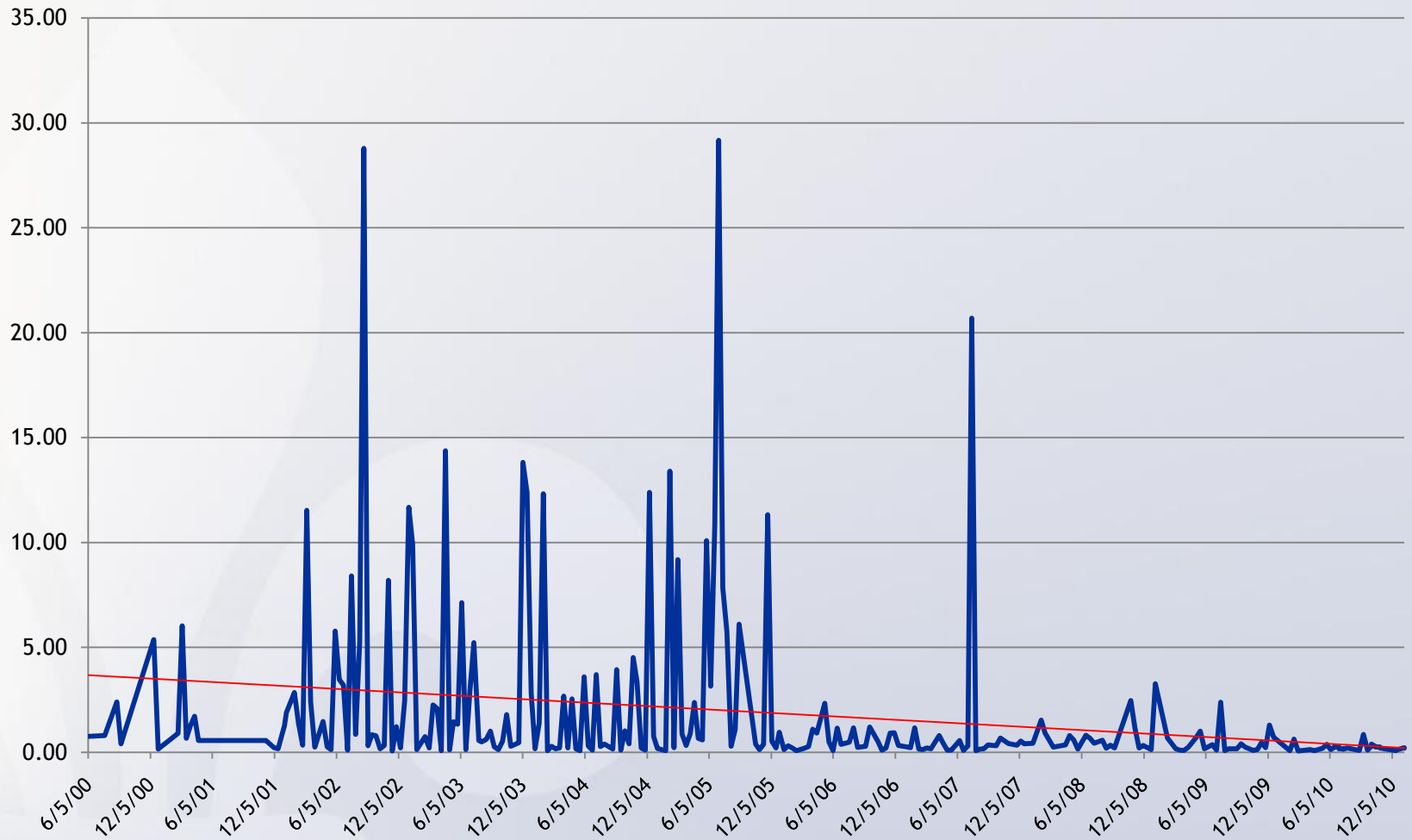
# Category One TACs

1. 107-13-1 . . . . . Acrylonitrile
2. 7440-38-2 . . . . . Arsenic and arsenic compounds
3. 71-43-2 . . . . . Benzene
4. 75-25-2 . . . . . Bromoform
5. 106-99-0 . . . . . 1,3-Butadiene
6. 7440-43-9 . . . . . Cadmium and cadmium compounds
7. 56-23-5 . . . . . Carbon tetrachloride
8. 67-66-3 . . . . . Chloroform
9. 126-99-8 . . . . . Chloroprene [2-Chloro-1,3-butadiene]
10. 7440-47-3 . . . . . Chromium and chromium compounds
11. 106-46-7 . . . . . 1,4-Dichlorobenzene
12. 140-88-5 . . . . . Ethyl acrylate
13. 50-00-0 . . . . . Formaldehyde
14. 75-09-2 . . . . . Methylene chloride [Dichloromethane]
15. 7440-02-0 . . . . . Nickel and nickel compounds
16. 127-18-4 . . . . . Perchloroethylene [Tetrachloroethylene]
17. 79-01-6 . . . . . Trichloroethylene
18. 75-01-4 . . . . . Vinyl chloride

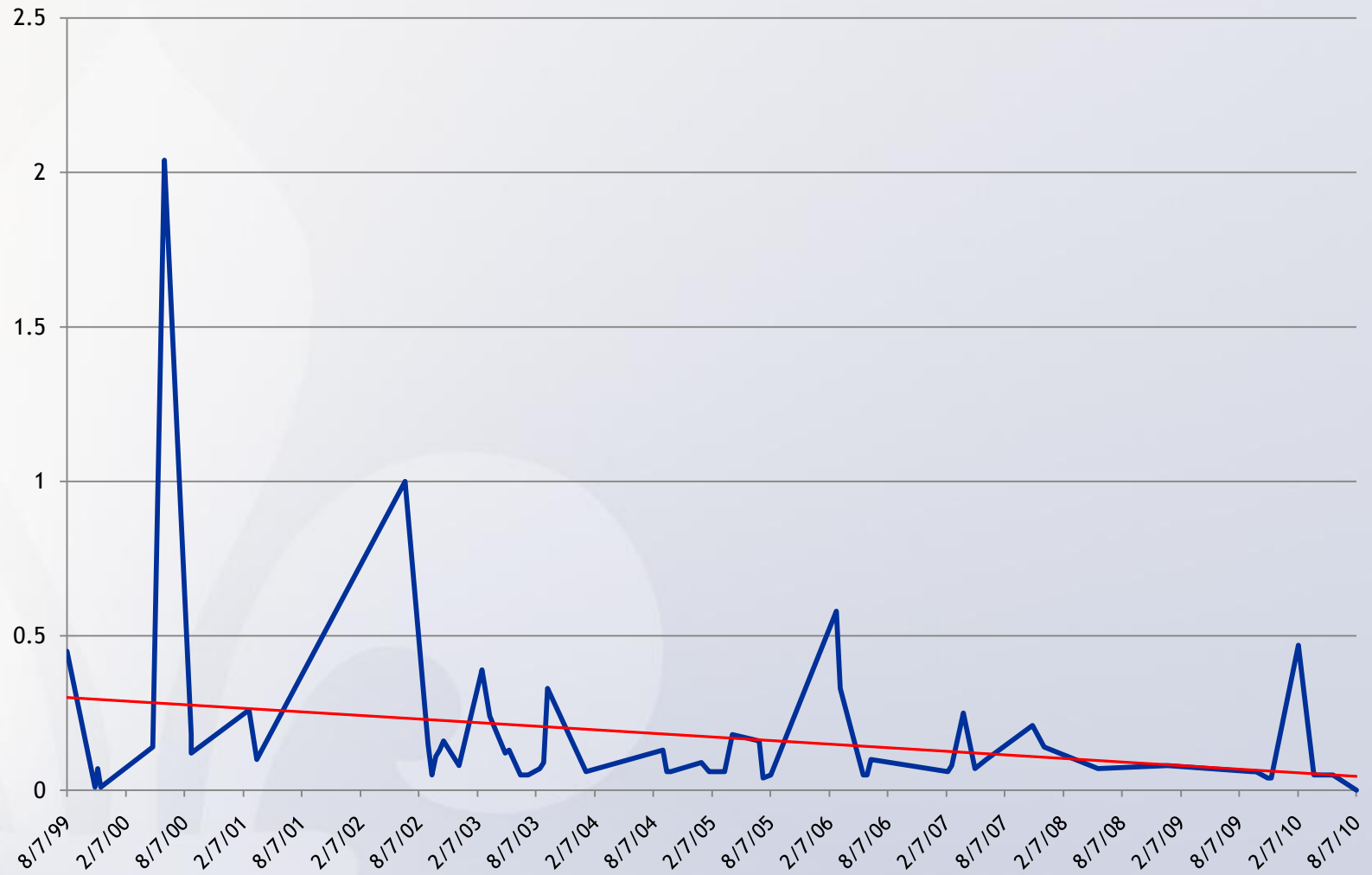
# Efforts to Reduce Risks

- **Industry Efforts**
  - **Voluntary reductions** of 1,3-butadiene and other carcinogens monitored at high risk levels by the WLATS.
  - **Review emissions** of the WLATS chemicals and consider plans to reduce these emissions.
- **Air Pollution Control District Efforts**
  - **The Strategic Toxic Air Reduction (STAR) Program**, a comprehensive package of regulations to reduce toxic air contaminants, is passed by Louisville Metro Air Pollution Control Board.

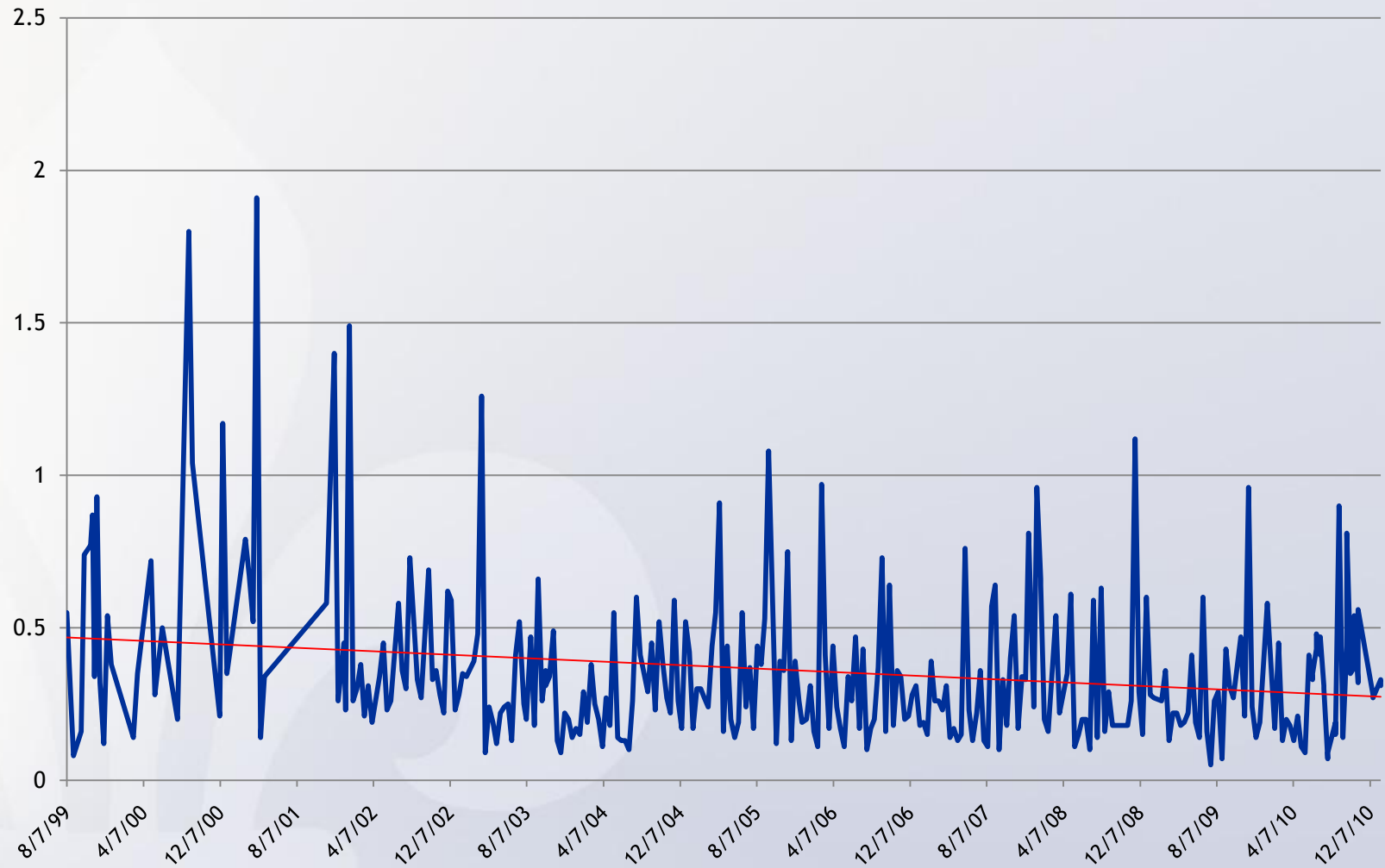
## Ralph Avenue Monitoring Site 1-3 butadiene



## Ralph Avenue Monitoring Site Vinyl Chloride



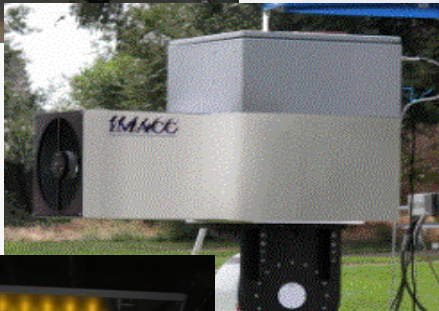
# Ralph Avenue Monitoring Site Benzene



# Continued Concerns

- Although levels of the chemicals have decreased, there is still concern in the community that chemical releases are undocumented because:
  - The samples collected are 24-hour averages, therefore peak concentrations are unknown.
  - Sampling occurs every 12 days leaving large gaps of time that are not monitored.
- These concerns have prompted additional toxics monitoring.

# Community-Scale Air Toxics Ambient Monitoring Study



- Received grant from EPA to conduct open-path monitoring of toxics along industrial fence line
- The study focuses on short-term averages over long time periods to capture spikes of target compounds
- Monitoring locations are considered to be at a higher risk because of:
  - Proximity to air toxic sources
  - Sensitive populations
- Purchased two instruments
  - Fourier transform infrared spectrometer (FTIR)
  - Ultraviolet-differential optical absorption spectrometer (UV-DOAS)

# Toxics Study Site Selection

Location:	Site Selected to Measure:
Cannons Lane	Urban exposure
Firearms Training	Industrial fence line
Farnsley Middle School	Sensitive population located in an industrial area
Chickasaw Park	Population
Ralph Avenue	Industrial fence line (maximum impact site)
Long Run Park	Background

# Community Air Toxics Monitoring Sites 2010

## Legend



CATM Sites

## Permitted Plants

- TITLE V
- FEDOOP
- MINOR

Rubbertown

Chickasaw Park

Firearms Training

Ralph & Campground

Farnsley Middle School

Cannons Lane

Long Run Park



0 2.5 5 Miles

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# Project Status

- Monitoring plan and QAPP have been completed and approved.
- Sampling has been conducted at 4 sites.
- Sampling at the 5<sup>th</sup> site will begin in May.
- Four QA runs with summa canisters have been completed, for a total of 23 canister samples taken.

# Challenges

- Both instruments have been down for extended periods of time during the study.
- U of L laboratory has also been down during the study.
- Personnel turnover.
- UV instrument has proven to be unreliable, difficult to align, and difficult to keep in alignment.
- Data analysis.
- Funding.

# Toxics Study Timeline



Complete  
method  
development  
at Cannons  
Lane in 2009



Complete  
Monitoring Plan  
and Quality  
Assurance  
Project Plan  
2010



Complete  
monitoring at  
all sites in  
2010-2011



Findings and  
Results in  
September  
2011



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